

WHAT IS CLAIMED IS:

1. A method of fabricating a light emitting device, comprising the steps of:

forming a semiconductor film on an insulator;

forming a gate insulating film covering the semiconductor film;

forming a first conductive film and a second conductive film on the gate insulating film;

forming an electrode made of the second conductive film by etching the second conductive film;

adding an n-type impurity element to the semiconductor film by self-alignment using the electrode made of the second conductive film;

forming an electrode made of the first conductive film by etching the first conductive film by self-alignment using the electrode made of the second conductive film;

forming a second gate electrode by narrowing a line width of the electrode made of the second conductive film by etching;

adding an n-type impurity element to the semiconductor film by self-alignment using the second gate electrode; and

forming a first gate electrode by narrowing a line width of the electrode made of the first conductive film by etching.

2. A method of fabricating a light emitting device, comprising the steps of:

forming a semiconductor film on an insulator;

forming a gate insulating film covering the semiconductor film;

forming a first conductive film and a second conductive film on the gate insulating film;

forming an electrode made of the second conductive film by etching the second conductive film;

adding an n-type impurity element to the semiconductor film by using the electrode made of the second conductive film as a mask and by making the n-type impurity element pass through the first conductive film;

forming an electrode made of the first conductive film by etching the first conductive film by self-alignment using the electrode made of the second conductive film;

forming a second gate electrode by narrowing a line width of the electrode made of the second conductive film by etching;

adding an n-type impurity element to the semiconductor film by using the second gate electrode as a mask and by making the n-type impurity element pass through the electrode made of the first conductive film; and

forming a first gate electrode by narrowing a line width of the electrode made of the first conductive film by etching.

3. A method of fabricating an electrical appliance having a light emitting device, comprising the steps of:

forming a semiconductor film on an insulator;

forming a gate insulating film covering the semiconductor film;

forming a first conductive film and a second conductive film on the gate

insulating film;

forming an electrode made of the second conductive film by etching the second conductive film;

adding an n-type impurity element to the semiconductor film by self-alignment using the electrode made of the second conductive film;

forming an electrode made of the first conductive film by etching the first conductive film by self-alignment using the electrode made of the second conductive film;

forming a second gate electrode by narrowing a line width of the electrode made of the second conductive film by etching;

adding an n-type impurity element to the semiconductor film by self-alignment using the second gate electrode; and

forming a first gate electrode by narrowing a line width of the electrode made of the first conductive film by etching.

4. A method of fabricating an electrical appliance having a light emitting device, comprising the steps of:

forming a semiconductor film on an insulator;

forming a gate insulating film covering the semiconductor film;

forming a first conductive film and a second conductive film on the gate insulating film;

forming an electrode made of the second conductive film by etching the second conductive film;

adding an n-type impurity element to the semiconductor film by using

the electrode made of the second conductive film as a mask and by making the n-type impurity element pass through the first conductive film;

forming an electrode made of the first conductive film by etching the first conductive film by self-alignment using the electrode made of the second conductive film;

forming a second gate electrode by narrowing a line width of the electrode made of the second conductive film by etching;

adding an n-type impurity element to the semiconductor film by using the second gate electrode as a mask and by making the n-type impurity element pass through the electrode made of the first conductive film; and

forming a first gate electrode by narrowing a line width of the electrode made of the first conductive film by etching.

5. A method of fabricating a light emitting device having at least one thin film transistor in a pixel portion, comprising the steps of:

forming a semiconductor film on an insulator;

forming a gate insulating film covering the semiconductor film;

forming a first conductive film and a second conductive film on the gate insulating film;

forming an electrode made of the second conductive film by etching the second conductive film;

adding an n-type impurity element to the semiconductor film by self-alignment using the electrode made of the second conductive film;

forming an electrode made of the first conductive film by etching the

first conductive film by self-alignment using the electrode made of the second conductive film;

forming a second gate electrode by narrowing a line width of the electrode made of the second conductive film by etching;

5 adding an n-type impurity element to the semiconductor film by self-alignment using the second gate electrode; and

forming a first gate electrode by narrowing a line width of the electrode made of the first conductive film by etching.

6. A method of fabricating a light emitting device having a pixel portion and a driver circuit formed over a same substrate, comprising the steps of:

forming a semiconductor film on an insulator;

forming a gate insulating film covering the semiconductor film;

15 forming a first conductive film and a second conductive film on the gate insulating film;

forming an electrode made of the second conductive film by etching the second conductive film;

20 adding an n-type impurity element to the semiconductor film by self-alignment using the electrode made of the second conductive film;

forming an electrode made of the first conductive film by etching the first conductive film by self-alignment using the electrode made of the second conductive film;

forming a second gate electrode by narrowing a line width of the

electrode made of the second conductive film by etching;

adding an n-type impurity element to the semiconductor film by self-alignment using the second gate electrode; and

forming a first gate electrode by narrowing a line width of the electrode made of the first conductive film by etching.

7. A method of fabricating a light emitting device according to claim 1, wherein an n-type impurity region (a) is formed at the former adding step, and an n-type impurity region (b) is formed at the latter adding step.

8. A method of fabricating a light emitting device according to claim 2, wherein an n-type impurity region (a) is formed at the former adding step, and an n-type impurity region (b) is formed at the latter adding step.

9. A method of fabricating an electrical appliance having a light emitting device according to claim 3, wherein an n-type impurity region (a) is formed at the former adding step, and an n-type impurity region (b) is formed at the latter adding step.

10. A method of fabricating an electrical appliance having a light emitting device according to claim 4, wherein an n-type impurity region (a) is formed at the former adding step, and an n-type impurity region (b) is formed at the latter adding step.

11. A method of fabricating a light emitting device according to claim 5, wherein an n-type impurity region (a) is formed at the former adding step, and an n-type impurity region (b) is formed at the latter adding step.

5 12. A method of fabricating a light emitting device according to claim 6, wherein an n-type impurity region (a) is formed at the former adding step, and an n-type impurity region (b) is formed at the latter adding step.

13. A method of fabricating a light emitting device according to claim 7, wherein a part of the n-type impurity region (b) overlaps the first gate electrode through the gate insulating film.

14. A method of fabricating a light emitting device according to claim 8, wherein a part of the n-type impurity region (b) overlaps the first gate electrode through the gate insulating film.

15 15. A method of fabricating a light emitting device according to claim 9, wherein a part of the n-type impurity region (b) overlaps the first gate electrode through the gate insulating film.

20 16. A method of fabricating a light emitting device according to claim 10, wherein a part of the n-type impurity region (b) overlaps the first gate electrode through the gate insulating film.

17. A method of fabricating a light emitting device according to claim 11, wherein a part of the n-type impurity region (b) overlaps the first gate electrode through the gate insulating film.

18. A method of fabricating a light emitting device according to claim 12, wherein a part of the n-type impurity region (b) overlaps the first gate electrode through the gate insulating film.

19. A method of fabricating a light emitting device according to claim 1, wherein the first conductive film is a tantalum nitride film, and the second conductive film is a tungsten film.

20. A method of fabricating a light emitting device according to claim 2, wherein the first conductive film is a tantalum nitride film, and the second conductive film is a tungsten film.

21. A method of fabricating an electrical appliance having a light emitting device according to claim 3, wherein the first conductive film is a tantalum nitride film, and the second conductive film is a tungsten film.

22. A method of fabricating an electrical appliance having a light emitting device according to claim 4, wherein the first conductive film is a tantalum nitride film, and the second conductive film is a tungsten film.



23. A method of fabricating a light emitting device according to claim 5, wherein the first conductive film is a tantalum nitride film, and the second conductive film is a tungsten film.

5 24. A method of fabricating a light emitting device according to claim 6, wherein the first conductive film is a tantalum nitride film, and the second conductive film is a tungsten film.

25. A method of fabricating a light emitting device according to claim 1, wherein the first conductive film is a tungsten film, and the second conductive film is an aluminum alloy film.

26. A method of fabricating a light emitting device according to claim 2, wherein the first conductive film is a tungsten film, and the second conductive film is an aluminum alloy film.

27. A method of fabricating an electrical appliance having a light emitting device according to claim 3, wherein the first conductive film is a tungsten film, and the second conductive film is an aluminum alloy film.

20 28. A method of fabricating an electrical appliance a light emitting device according to claim 4, wherein the first conductive film is a tungsten film, and the second conductive film is an aluminum alloy film.

29. A method of fabricating a light emitting device according to claim 5, wherein the first conductive film is a tungsten film, and the second conductive film is an aluminum alloy film.

5 30. A method of fabricating a light emitting device according to claim 6, wherein the first conductive film is a tungsten film, and the second conductive film is an aluminum alloy film.

31. A method of fabricating an electrical appliance having a light emitting device according to claim 3, wherein said electrical appliance is an appliance selected from the group consisting of: a video camera, a digital camera, a DVD, a portable computer, a personal computer, a portable telephone and an audio.

15 32. A method of fabricating an electrical appliance having a light emitting device according to claim 4, wherein said electrical appliance is an appliance selected from the group consisting of: a video camera, a digital camera, a DVD, a portable computer, a personal computer, a portable telephone and an audio.